

What is claimed is:

[Claim 1] 1. A measurement tool, comprising:

a body;

at least one strain gauge cavity in said body, said strain gauge cavity having a strain gauge mounting surface that is located at a position such that a region of approximately zero strain due to at least one downhole operating condition exists on said mounting surface when said tool is subjected to said at least one downhole operating condition; and

a strain gauge operatively coupled to said mounting face above said region of approximately zero strain.

[Claim 2] 2. The tool of claim 1, wherein said strain gauge is a weight-on-bit strain gauge.

[Claim 3] 3. The tool of claim 2, wherein said at least one operating condition comprises downhole pressures during drilling operations.

[Claim 4] 4. The tool of claim 1, wherein said region of approximately zero strain comprises a region of approximately zero axial strain.

[Claim 5] 5. The tool of claim 1, further comprising a cover plate positioned in an opening of said cavity.

[Claim 6] 6. The tool of claim 5, wherein said cover plate and said cavity define a chamber substantially free of liquids.

[Claim 7] 7. The tool of claim 5, wherein said cavity defines a space that is filled with a liquid.

[Claim 8] 8. The tool of claim 1, wherein said cavity has a circular cross-sectional configuration.

[Claim 9] 9. The tool of claim 1, wherein said tool is comprised of at least one of stainless steel, a carbon steel and titanium.

[Claim 10] 10. The tool of claim 1, wherein said cavity has a circular cross-sectional configuration of a diameter of approximately 1-1/2" and said mounting face is positioned at a depth of approximately 1-1/8" below an outer surface of said body.

[Claim 11] 11. The tool of claim 1, wherein said cavity is formed in said body.

[Claim 12] 12. The tool of claim 1, wherein said cavity is defined, at least partially, by a cavity insert positioned in said body.

[Claim 13] 13. The tool of claim 12, further comprising an internal passageway formed between an internal bore of said body and said cavity insert.

[Claim 14] 14. The tool of claim 12, wherein at least a portion of said cavity insert has a conical configuration.

[Claim 15] 15. The tool of claim 1, wherein said tool comprises at least two strain gauge cavities in said body, each of which has a strain gauge mounting surface that is located at a position such that a region of approximately zero strain due to downhole operating conditions exists on the

mounting face when said tool is subjected to said downhole operating conditions.

[Claim 16] 16. The tool of claim 15, wherein said tool comprises at least one strain gauge operatively coupled to each of said mounting faces above said region of approximately zero strain.

[Claim 17] 17. The tool of claim 15, wherein each of said strain gauges is a weight-on-bit strain gauge.

[Claim 18] 18. The tool of claim 15, wherein said region of approximately zero strain comprises a region of approximately zero axial strain.

[Claim 19] 19. A method, comprising:
providing a measurement tool comprised of:
a body;
at least one strain gauge cavity in said body, said strain gauge cavity having a strain gauge mounting surface that is located at a position such that a region of approximately zero strain due to downhole operating conditions exists on said mounting surface when said tool is subjected to said downhole operating conditions; and
a strain gauge operatively coupled to said mounting face above said region of approximately zero strain;
positioning said tool in a subterranean well bore; and
obtaining measurement data using said strain gauge in said tool.

[Claim 20] 20. The method of claim 19, wherein said measurement data is provided on a real-time basis.

[Claim 21] 21. The method of claim 19, wherein said measurement data is provided on a non-real-time basis.

[Claim 22] 22. The method of claim 19, wherein said strain gauge is a weight-on-bit strain gauge.

[Claim 23] 23. The method of claim 19, wherein said region of approximately zero strain comprises a region of approximately zero axial strain.

[Claim 24] 24. The method of claim 19, wherein said downhole operating conditions comprises downhole pressure during drilling operations.